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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/214,708 01/11/99 ITANO

M XI/P6217USO

EXAMINER

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IM22/1009

SMETANA, J

ART UNIT

PAPER NUMBER

1746

DATE MAILED:

10/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/214,708

Applicant(s)

ITANO, MITSUSHI

Examiner

Jiri F. Smetana

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-10 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6, 7 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 8 and 9 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 10 September 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/214,708 is acceptable and a CPA has been established. An action on the CPA follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 6 and 7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sony Corp., JP 04-346428.

The claimed invention reads on JP 04-346428 as follows: JP 04-346428 discloses a chamber cleaning method comprising the step of treating a plasma CVD chamber of a semiconductor integrated circuit production device with a chamber cleaning gas of $\text{CF}_3\text{CF}=\text{CF}_2$ (abstract).

The elements in the claims are read in the reference.

By “treating” the chamber with a gas of $\text{CF}_3\text{CF}=\text{CF}_2$, the $\text{CF}_3\text{CF}=\text{CF}_2$ inherently cleans the CVD plasma chamber. It is not material as to whether Applicant calls the gas an etching gas or a cleaning gas, as both etching and cleaning processes take place simultaneously in the chamber under plasma conditions.

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabric et al., U.S. Pat. No. 5,281,302, in view of Sony Corp., JP 04-346428.

Gabric discloses a chamber cleaning method by treating a plasma CVD chamber of a semiconductor production device with a gaseous mixture of at least one fluorinated carbon, or any other similar fluorine containing gases (column 2, lines 3-5), and oxygen (column 2, lines 27-44).

Gabric does not disclose the use of CF_3CFCF_2 gas.

Sony Corp. discloses the use of CF_3CFCF_2 unsaturated gas (column 7, line 46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to claim a method as disclosed in Gabric in combination with Sony Corp. because Sony Corp. teaches that dry etching in the preparation of semiconductor devices with a variation of unsaturated gases with the basic formula of C_xF_y , where $x=2$ or more and $y=2x$ or less, but preferably CF_3CFCF_2 (hexafluoropropylene) gas, because the type and number of bonds are not specifically limited and may be tailored to desired etching results (column 5, lines 30-50). The reference of JP 04-346428 by itself teaches Applicant's method of "treating a plasma CVD chamber" with CF_3CFCF_2 .

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Response to Arguments

6. Applicant's arguments filed 10 August 2001 as a Continued Prosecution Application have been fully considered but they are not persuasive.

4. Applicant agrees with Examiner that cleaning is a type of plasma etching, but not that cleaning is totally different from the usual etching because ions are not given any energy in the plasma for cleaning and only free radicals conduct isotropic etching by chemical reactions in cleaning. Gabric et al., U.S. Patent No. 5,281,302, discloses that the cleaning gas is an etching gas wherein a plasma is generated with by activation with electrodes (column 1, line 63 - column 2, line 6). Whether the reaction is or is not strictly "chemical" is of no significance because the disassociation of molecules into respective ionic species is in itself a "chemical" reaction. Further, the energy to activate the etching gas is continuously applied to the electrodes in the chamber until the desired results are obtained with the etching/cleaning plasma gas. Therefore, energy is supplied to the ions in the plasma gas. Further, the features upon which Applicant relies (i.e., excluding the application of energy) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

7. Applicant argues that the target in plasma etching is a wafer and that the target in plasma cleaning is the chamber itself. This argument carries no weight. Gabric clearly recites that plasma cleaning of a CVD chamber is done by plasma etching, wherein "etching" and "cleaning" occur concurrently (column 1, lines 6-11, 59-62). Further, Applicant admits that the target in "etching" is mainly SiO₂ (page 2, line 9) and that the target in "plasma cleaning" is also SiO₂ (page 2, line 22). In response to this admission, there is no difference between a target in

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“etching” or a target in “plasma cleaning” because they are both composed of the same material/substance.

8. Applicant argues that unsaturated fluorocarbons have been traditionally used for etching because they are more likely to form cations such as CF_3^+ , CF_2^+ , and CF^+ , whereas a cleaning species is a fluorine free radical (F^\cdot). However, since both cations and fluorine free radicals are present in the CVD chamber, both “etching” and “plasma cleaning” take place at the same time, as supported by Gabric. Applicant fails to provide anywhere in the specification or claims any sort of process parameters such as flow rate, temperature, concentrations, etc., or any limitations that the chamber “plasma cleaning” is a result of fluorine free radicals (F^\cdot).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jiri F. Smetana whose telephone number is (703)605-1173. The examiner can normally be reached on Monday-Friday (7:30am-4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Randy P. Gulakowski can be reached on (703)608-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-7718 for regular communications and (703)305-3599 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Jiri F. Smetana
Patent Examiner
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jfs
October 4, 2001

A handwritten signature in black ink, appearing to read "Randy Gulakowski". The signature is fluid and cursive, with the first name "Randy" being more prominent than the last name "Gulakowski".

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700